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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,364	11/07/2001	Donald T. Green	PII 3341	1701

7590 02/06/2004
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EXAMINER

MCCALL, ERIC SCOTT

ART UNIT PAPER NUMBER

2855

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/045,364	Applicant(s) GREEN ET AL.	
	Examiner Eric S. McCall	Art Unit 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-11, 13-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/23/03</u> . | 6) <input type="checkbox"/> Other: _____ |

X-RAY IMAGE ENHANCEMENT

FINAL OFFICE ACTION

In response to the Applicant's amendment dated Oct. 23, 2003.

ABSTRACT

In response to the Applicant's amendment, the objection to the abstract as set forth in the previous office action has been overcome.

DRAWINGS

In response to the Applicant's amendment, the objection to the drawings as set forth in the previous office action has been overcome.

CLAIMS

35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 7-11, 13-15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Granfors et al. (5,574,764).

With regards to claim 1, Granfors et al., as disclosed by the Applicant as admitted prior art, teach a fluoroscopic imaging apparatus (col. 1, lines 12-15) comprising:

an x-ray source for projecting x-rays through a subject, the x-ray source having a voltage and a current associated therewith (col. 1, lines 26-30);

an x-ray detector for detecting radiation which has passed through the subject (col. 1, lines 61-63);

a monitor ("imaging system") for displaying an image indicative of the detected radiation, the image defining a field of view;

an operator interface for defining a region of interest within the field of view (col. 2, line 4); and

enhancement means for enhancing, in response to image data within the region of interest, a subsequent image of the region of interest (col. 2, lines 5-15).

With regards to claim 2, the prior art teaches the enhancement means comprising:
an image processor which generates a brightness histogram of pixels within the region of interest (col. 3, line 66 to col. 4, line 4);
an automatic exposure controller which, in response to the brightness histogram, adjusts at least one of the voltage and current of the x-ray source (col. 1, lines 26-29); and
an automatic brightness controller which, in response to the brightness histogram, generates a lookup table for mapping pixels generated by the fluoroscopic imaging apparatus to a display scale for displaying the pixels on the monitor (col. 4, lines 6-10).

With regards to claim 3, the prior art suggests the claimed subject matter thereof (col. 2, lines 57-67).

With regard to claims 5, 7, and 8, the prior art suggests the claimed subject matter thereof (col. 3, lines 21-38).

With regards to claim 9, the prior art teaches a fluoroscopic imaging apparatus (col. 1, lines 12-15) comprising:

an x-ray source for projecting x-rays through a subject, the x-ray source having a voltage and a current associated therewith (col. 1, lines 26-30);

an x-ray detector for detecting radiation which has passed through the subject (col. 1, lines 61-63);

display means for displaying real-time video images indicative of the detected radiation on a monitor (col. 1, lines 22-26);

a pointing device by which an operator can define a region of interest from within the video images (col. 3, lines 21-38);

an image processor for generating a histogram of image data of the region of interest (col. 3, line 66 to col. 4, line 4);

an automatic exposure controller for controlling at least one of the x-ray source voltage and the x-ray source current in response to the histogram of the region of interest (col. 1, lines 26-29); and

an automatic brightness controller for mapping the image data of the region of interest to a display scale of the monitor in response to the histogram of the region of interest (col. 4, lines 6-10).

With regards to claim 10, the prior art teaches the claimed subject matter thereof (col. 3, lines 66+).

With regards to claim 11, the prior art suggests the claimed subject matter thereof (col. 3, lines 21-38).

With regards to claim 13, the prior art suggests the claimed subject matter thereof (col. 2, lines 57-67).

With regards to claim 14, the prior art teaches a method of fluoroscopic imaging (col. 1, lines 12-15) comprising the steps of:

projecting x-rays through a subject using an x-ray source, the x-ray source having a voltage and a current associated therewith (col. 1, lines 26-30);

detecting radiation which has passed through the subject (col. 1, lines 61-63);

displaying on a monitor an image indicative of the received radiation, the image defining a field of view (col. 1, lines 22-26);

displaying borders of a region of interest, the region of interest being within the field of view and being defined by an operator and having a brightness and contrast associated therewith (col. 3, lines 21-38);

generating a brightness histogram of the image data within the region of interest (col. 3, line 66 to col. 4, line 4);

adjusting at least one of the x-ray source voltage and the x-ray source current in response to the brightness histogram of the region of interest whereby the display of the region of interest is thereafter enhanced; (col. 1, lines 26-29); and

adjusting at least one of the brightness and contrast of the region of interest in response to the histogram of the region of interest whereby the display of the region of interest is thereafter enhanced (col. 4, lines 6-10).

With regards to claim 15, the prior art teaches the claimed subject matter thereof (col. 3, lines 66+).

With regards to claim 17, the prior art teaches the claimed subject matter thereof (col. 3, lines 21-38).

Allowable Subject Matter

Claims 4, 6, 12, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Added claims 18 and 19 have been found to be allowable over the prior art because the prior art fails to teach or suggest a pointing device being overlaid on the image in combination with the remaining limitations of each respective claim.

Response to Arguments

The Applicant's arguments have been considered but have not been found to be persuasive. Specifically, the Applicant has argued that the above prior art fails to teach or suggest an operator interface for defining a region of interest within the field of view as set forth in independent claims 1 and 9. However, the Examiner has deemed the prior art as suggesting such because (1) the prior art does define a region of interest within the field of view (col. 2, line 4) and (2) the region of interest is defined via an operator interface as claimed because without operator interaction such a region would never be set forth (ie. defined). In other words, regardless if the prior art stores such a region of interest in a mask memory as argued by the Applicant, operator interface does play a part in defining a region, and thus the prior art suggests that which is claimed by the Applicant.

CONCLUSION

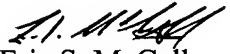
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Eric S. McCall at telephone number (571) 272-2183.


Eric S. McCall
Primary Examiner
Art Unit 2855
Feb. 02, 2004